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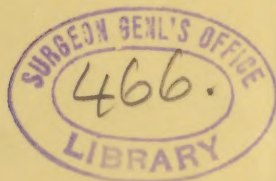
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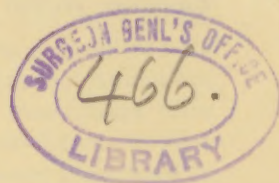
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TWO SUCCESSFUL CASES OF THE CONSERVATIVE CÆSAREAN SECTION.

By CHARLES JEWETT, M.D.

THE operations referred to in the title of this paper were both done in December last at the Long Island College Hospital. The first patient was a woman of English birth, æt. thirty-two years. With the exception of a chronic nephritis, she was apparently in fair health. No important uræmic symptoms appeared at any time, yet, twice after the operation there was partial suppression of urine which was promptly relieved by moderate doses of diuretine. The only outward signs of bony deformity were her small stature (4 ft. 6 in.—137.2 cm.), and a lumbo-sacral kyphosis, the summit of which corresponded to the fourth lumbar vertebra. The character of the spinal deformity is shown in the accompanying figure (Fig. 1). The compensatory lordosis above pitched the uterus forward, giving the abdomen an unusually globular and pendulous shape. The pelvic measurements were: Iliac crests, $11\frac{1}{2}$ in. (29.2 cm.); iliac spines, $10\frac{1}{2}$ in. (26.6 cm.); external conjugate, $7\frac{1}{2}$ in. (19 cm.); symphysis pubis, 2 in. (5.1 cm.) deep; diagonal conjugate, $4\frac{1}{4}$ in. (10.8 cm.); true conjugate, estimated at $3\frac{3}{4}$ in. (9.5 cm.); coccyx to subpubic ligament, $2\frac{3}{4}$ in. (7 cm.); bisischial diameter, $2\frac{1}{4}$ in. (5.7 cm.). The patient was admitted to the hospital in the evening of December 1, 1891, labor having begun at 10 in the morning. At 12 midnight the waters had drained away and the head had sunk well into the excavation; the os externum was dilated to the size of a half dollar and was dilatable; the child was small, the head within easy reach and the case altogether a favor-

able one for craniotomy. This operation was determined upon after consultation with Dr. Dickinson, of the attending, and Dr. Wallace of the consulting staff. This decision, however, was reversed on learning that the woman was a Catholic, and the Cæsarean section was done by necessity in deference to the re-

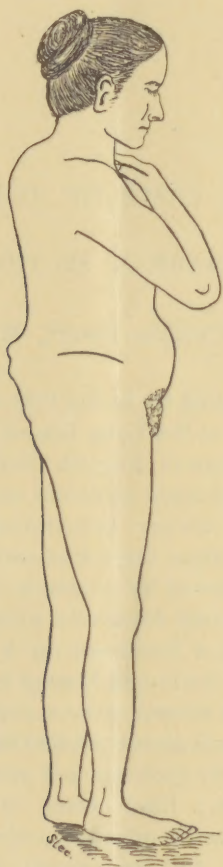


FIG. 1.

quirements of her religious faith. The pulse, shortly before the operation, was 90 and weak, and the patient showed signs of approaching exhaustion.

Operation.—First incision at 2.11 A.M.; some difficulty and loss of time in applying the cervical constrictor, which was a large, thin-walled rubber tube; placental seat directly under the uterine

incision; hand passed over the left edge of the placenta, and through the membranes; head extracted from the pelvic cavity with difficulty, and only after relaxing the grasp of the constrictor; child delivered in four minutes from the time of first incision; cord clamped at two points with catch-forceps and cut between them; the child was alive and respiration was promptly established; the uterus was drawn up into the abdominal wound but not out of the abdomen; the placenta and membranes were separated by hand, and the uterine cavity left undisturbed. The uterine incision, which, owing to the strong forward inclination of the uterus, reached well up on the fundus, was closed with twelve deep silk sutures in seventeen minutes from beginning of operation; deep sutures included the decidua; symperitoneal suture with fine catgut; almost no handling, and no special cleansing of the peritonæum, a small amount of blood and bloody serum being left in the cavity; abdominal incision closed with ten silk sutures and dressed with a thick covering of dry gauze fresh from the steam sterilizer; blood-loss no greater than in ordinary labor. The tonicity of the uterine muscles was apparently unimpaired by the cervical constriction, though a good deal of tension was required for a time to control hæmorrhage. Retraction promptly followed moderate manipulation and the injection of a half drachm of fluid ergot under the skin. The patient made a good recovery. The lochia remained odorless. There was only a barely perceptible meteorism for a few hours, and at no time any evidence of sepsis. After the eighth day an occasional slight rise of temperature occurred which was controlled by quinine. Five grains of calomel were given toward the end of the second day and followed with a saline. The abdominal sutures were removed on the tenth day. Uterine involution was slow, but the woman was ready to leave the hospital by the end of four weeks, except for a sciatica which detained her for some time longer. The child was a female, weighing five-and-a-quarter pounds. The head measurements were: Bi-parietal, $3\frac{1}{2}$ in. (8.9 cm.); O. F., $4\frac{1}{4}$ in. (10.8 cm.); O. M., $5\frac{1}{4}$ in. (13.3 cm.)

The second case was that of a German immigrant, æt. twenty years. She was transferred to the maternity from the medical wards with the following history: Subject to frequent hysterical paroxysms with occasional convulsions; the attacks were frequently followed by semi-coma, lasting for days; badly nourished, owing to anorexia and frequent emesis; ejecta at times contained considerable quantities of blood. A notable feature of this case was the irregular and excessively high flights of temperature, which

several times before operation mounted to 107° , once to 110° F. The temperature would generally fall in an hour or two nearly or quite to the normal without treatment (see temperature chart, Fig. 2). The pyrexia was believed to be mainly of neurotic origin; some days before operation barely perceptible signs of beginning consolidation were detected at the apex of one lung, which were attributed by Professors McCorkle and West, who kindly examined the patient, to a slight broncho-pneumonia. The lung cleared up in two or three weeks after operation, and the trouble was at no time sufficiently marked to be regarded as a factor in the high temperature. There was also an intense stomatitis, with patches and ulcers on the mucous membranes of the mouth and throat, attended with copious salivation and partial or complete aphonia. Post-cervical glands indurated. A careful laryngoscopic examination by Dr. W. F. Dudley substantially confirmed the diagnosis of syphilis in the second stage.

The patient was of slight figure, 4 feet $6\frac{1}{2}$ inches (138.5 cm.) in height, and with no bony deformities except in the pelvis, which was extremely flattened. Pelvic measurements were: Crests, $10\frac{1}{4}$ in. (26 cm.); iliac spines, $10\frac{3}{4}$ in. (27.2 cm.); external conjugate, $6\frac{1}{4}$ in. (15.9 cm.); diagonal conjugate, $3\frac{1}{4}$ in. (8.3 cm.); depth of symphysis pubis, $2\frac{1}{4}$ in. (5.7 cm.); true conjugate estimated at $2\frac{1}{2}$ in. (6.4 cm.); pubo-coccygeal diameter, $2\frac{1}{4}$ in. (5.7 cm.); bisischial, $2\frac{1}{4}$ in. (5.7 cm.). Labor pains began at 1 P.M., December 16, and about the end of the sixth month of gestation, or a little later. Fundus well above the umbilicus; waters escaped at 6 P.M.; at 9.15 the cervix was not effaced and admitted one finger with difficulty; while a piecemeal extraction of the foetus or cephalotripsy would have been possible, craniotomy through a pelvis so narrow at both inlet and outlet would have been an awkward and difficult operation, to say nothing of the long delay that would have been necessary owing to the unyielding condition of the soft parts. Cæsarean section was therefore decided upon mainly in the interest of the mother, though not wholly without hope of a viable child, Drs. Wallace and Hyde, of the consulting staff, and Dr. Dickinson concurring. Temperature immediately before operating, $108\frac{8}{10}^{\circ}$ F., pulse, 98.

Operation.—First incision at 10.41 P.M. Troublesome protrusion of intestines from tympanitic distention; provisional uterine ligature of large, thin-walled rubber tube, as before; placenta attached anteriorly; left edge separated and child delivered in four minutes, alive and breathing but not viable; uterus lifted out of the abdo-

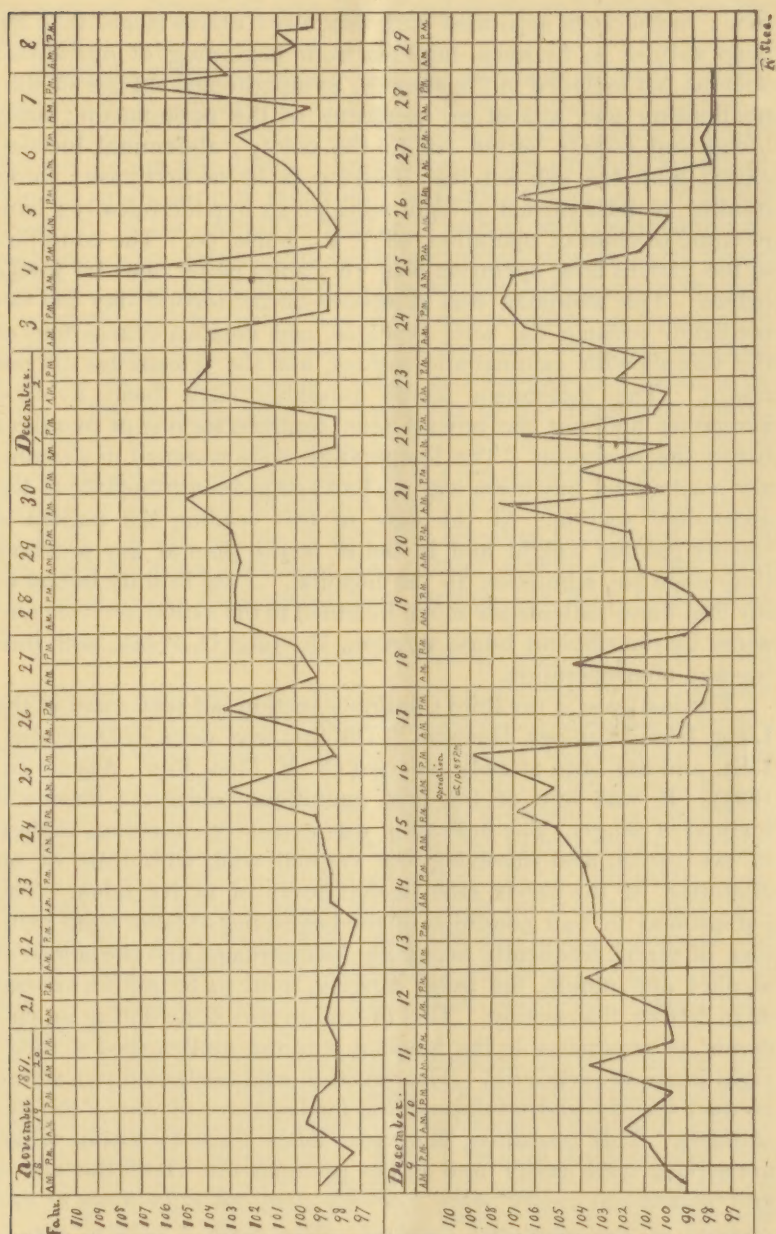


FIG. 2.

men; membranes separated with difficulty; uterus closed with ten deep sutures in fourteen minutes from beginning of operation; decidua not included in the sutures; symperitoneal sutures of silk; no flushing and almost no cleansing of the peritonæum; some blood and bloody serum left in the cavity; abdominal incision closed with ten silk sutures; dressing as in the first case; thirty minims of fluid extract of ergot were given hypodermically; temperature at close of operation, $98\frac{3}{4}^{\circ}$ F.; pulse, 90. The condition of the patient after operation was very soon better than for weeks before. The abdomen was distended on the second day but immediately became flat after repeated and copious evacuations of the bowels with calomel and salines, and the tympanites did not return. The meteorism would probably have been avoided altogether had not the bowels been confined for one or two days before the operation. The temperature soon resumed its customary oscillations but there was no bad symptom attributable to the abdominal section. At the date of this reading the patient is rapidly gaining weight and in better health than at any previous time since her admission to the hospital. I am in duty bound to say that these patients are much indebted to the skilful services rendered by the efficient house surgeon, Dr. John O. Polak, both during and after operation.

The last case is my third Cæsarean section, all performed in the Long Island College Hospital. The first was done in December, 1883, and has been already reported (*N. Y. Med. Jour.*, August 29, 1885). It was one of the first operations under the improved method of Säger. The indication was extensive cancerous disease of the cervix, also involving the vaginal wall, with little or no dilatation of the cervix after twelve hours of active labor. The patient was in bad condition at the beginning of labor from pain, loss of sleep, frequently recurring hæmorrhage and the abuse of alcohol and opium, the pulse ranging from 94 to 108 for several days before the section. The operation was done during an epidemic of erysipelas in the hospital, and the mother died in forty-eight hours of peritonitis. The infection was attributed to a septic contact which occurred through the inadvertence of one of the bystanders. This operation, moreover, dates back to a time when antiseptics were freely used in the peritonæum. Both the uterus and abdominal cavity were carefully cleansed with more or less contact of the mercurial solution. The death, I believe, was a preventable one. There was no evidence, post-mortem, of sepsis in the uterine cavity, and the uterine incision was securely closed

throughout. The child was living and doing well when it left the hospital.

Remarks.—Several observations of practical interest suggest themselves in connection with the two recent cases. I may say, first, that the entire procedure in both was made as nearly as possible microscopically clean. Instruments were exposed for fifteen minutes to dry heat of about 260° F. shortly before use. With the exception of the operative field, the patient and immediate surroundings were covered with cloths and sheets fresh from the steam chamber. The hand-disinfection lacked the advantage of the permanganate method, but it was made as complete as possible by laborious and long-continued scrubbing with sterilized brushes, with the use of green soap, alcohol, and the mercuric iodide solutions. The sutures, with the exception of the superficial uterine sutures in the first case, were of silk, which had been immersed for two hours in a soft paraffine wax at a temperature of 260° to 280° F., and subsequently sealed in a bottle of alcohol and steamed for an hour. A like degree of care was observed throughout, except that lack of time prevented any further attention to the room (which was the labor-ward) than wetting the floor to suppress dust.

One matter in which practice differs in Cæsarean section is the provisional ligation of the cervix. The prevention of hæmorrhage from the uterine incision is more satisfactorily accomplished by the use of an elastic rubber tube than by manual control or by the inelastic gauze band of Säger. The objection to the tube, that it is liable to injure the tonicity of the muscles is obviated by employing a large tube with thin walls, which spread as it is drawn taut and distribute the pressure over a large surface. In the two recent cases reported in this paper, though the placental site was incised in both and forcible constriction was used, the contractile power of the uterus was apparently not in the least impaired. Neither manual nor instrumental control of the uterus, however, is absolutely essential.

A vital point in the Cæsarean operation is the accurate and secure closure of the uterine incision. In numerous fatal cases the death has been traced to gaping of the uterine wound and leakage of lochia into the peritonæum. Even a minute fistulous tract has been sufficient to cause the death of the patient. The improved results of the modern operation are largely due to the attention which has been given to the accurate closure of the uterine wound.

Some difference of practice obtains in regard to the avoidance of the decidua in the deep uterine suture. Säger strongly insists upon the necessity for this precaution and cites an experience of Macan's in which infection took place from the uterine cavity through the needle tract. Zweifel, on the other hand, takes no pains to avoid the decidua, and his record is twenty-nine cases with but one death, and that a preventable one. Schauta's practice, is similar, and he has done fifteen Cæsarean sections without a death. The entirely buried suture, however, would seem safer, as avoiding all possibility of secondary infection of the needle tract. The first of my recent cases goes to enforce this conclusion. The deep sutures in this case were passed into the uterine cavity. While the patient made a perfectly good recovery, a few days ago a fistula was discovered at the lower end of the abdominal cicatrix, which leads down, I assume, to an infected uterine suture.

The suture material which best serves the purpose and is now generally adopted, is that which is the most easily prepared and the most convenient in use, viz., silk. While the ideal suture is one that will hold securely for the required length of time and then be absorbed. These conditions are not wholly met by catgut. Soft catgut has been responsible for several deaths by yielding too soon, and hard chromic gut has little advantage over silk in point of absorbability; moreover, a serious defect in catgut, however prepared, is the comparative insecurity of the knot.

Another moot point is the superficial uterine suture. The half-deep superficial suture which has been used by Zweifel, Kelly, and others is an important saving of time. Yet there is a certain sense of security in completely closing the peritonæum in a welt over the deep sutures as is still practiced by Säger.

Conspicuous points in the technique of the Cæsarean operation are the treatment of the uterine and the peritoneal cavities. It is the practice of Säger and others after the separation of the placenta and membranes to scrub the cavity with a fold of gauze. In my recent cases the uterine cavity was left literally untouched after peeling off the membranes, and this seems to me the more rational procedure in the absence of infected fluids. The endometrium is left aseptic after removal of the secundines, and antiseptic douching or scrubbing is not only uncalled for but injurious. Even decidual shreds, in the absence of sepsis, are better left to be cast off with the lochia. A septic uterus on the other hand should not be trusted to the conservative operation at all, but should be amputated.

A careful peritoneal *toilette* is generally deemed essential in this operation as is the common rule in other laparotomies. In the two recent cases above reported, little attempt was made at cleansing the peritonæum. A small gauze compress was passed once in front and once behind the uterus to make sure that no accumulation of bloody fluid remained in the *culs-de-sac*. In both cases, and especially the second, the uterus and surrounding surfaces of peritonæum were everywhere soiled with blood when the abdomen was closed. The extreme care generally required in cleansing in other laparotomies is here, I believe, unnecessary. A healthy peritonæum, such as we usually have to deal with in a Cæsarean section, is less injured by a little blood, even if not absolutely aseptic, than by much sponging. The peritoneal epithelium is removed by sponging or handling, or even by irrigation, and the resisting power of the peritonæum is impaired, to say nothing of increased risk of adhesions. In the Cæsarean operation, with care to prevent the entrance of much blood and liquor amnii into the abdominal cavity, the usual peritoneal *toilette* may be almost wholly omitted.

Foreign authorities and most others, so far as I know, have fixed upon the end of the first labor period as the preferred time for operating. This is done on the assumption that the establishment of labor before operating is essential to subsequent retraction of the uterus and to free lochial drainage. An experience, however, of several cases operated before labor, to say nothing of a large number of deliveries by cattle-horn lacerations, which have been followed by sixty-nine per cent. of recoveries (Harris) is sufficient to show that this assumption has no foundation in fact. The obvious advantage of operating with deliberate preparation before the rupture of the membranes and with the patient in full strength furnish a strong argument for an appointed time, if possible, shortly before the expected date of labor.

The main conditions of success in Cæsarean section are, obviously, asepsis, and the accurate suture of the uterine wound. Reasonable rapidity, however, is important, and, as Harris observes, the length of time should not exceed three-quarters of an hour if the best results are to be expected. To these conditions I am disposed to add the early use of saline catharsis after operation. In the two recent cases a small dose of calomel was given and followed by salines soon after the first expulsion of flatus from the bowel. My experience, not alone in these cases, but a somewhat extensive one in analogous conditions, leads me to place a high value on early resort to peritoneal drainage by the intestines.

In conclusion, I submit that laparo-hysterotomy under modern methods is a relatively benign abdominal section. Its *technique* is one of the simplest in abdominal surgery, and the patient, in timely operations, is in comparatively good condition. Is it not reasonable to expect that the results of Cæsarean delivery in relatively healthy women shall fully equal or exceed the best records of laparotomy in disease?

